

PCTWORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : A61K 31/00, 7/50, 7/00, A61L 15/34, A61F 13/15		A1	(11) International Publication Number: WO 99/26610
			(43) International Publication Date: 3 June 1999 (03.06.99)
(21) International Application Number: PCT/US98/24691 (22) International Filing Date: 20 November 1998 (20.11.98) (30) Priority Data: 97120700.6 26 November 1997 (26.11.97) EP (71) Applicant (for all designated States except US): THE PROCTER & GAMBLE COMPANY [US/US]; One Procter & Gamble Plaza, Cincinnati, OH 45202 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): PALUMBO, Gianfranco [IT/DE]; Georgenfeld 7, D-61348 Bad Homburg (DE). GUARRACINO, Mario [IT/IT]; Via da denominare 28, 9, I-64028 Silvi Marina (IT). (74) Agents: REED, T., David et al.; The Procter & Gamble Company, 5299 Spring Grove Avenue, Cincinnati, OH 45217-1087 (US).		(81) Designated States: AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report.	
(54) Title: SKIN CARE COMPOSITION			
(57) Abstract The invention relates to compounds to be used for preparation of compositions, which can be applied to the skin to prevent or reduce or treat skin rash or diaper rash resulting from lipolytic dermatitis. The compositions can be in the form of cosmetic lotions, creams, powders, oils, foams and the like. The compositions can also be applied to diapers, incontinent-pads, wipes and the like. The invention also relates to the use of such a composition to prevent or reduce such a skin rash and a process for reducing the lipolytic enzyme activity of lipase enzymes present on external skin.			

BEST AVAILABLE COPY

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

5

SKIN CARE COMPOSITION

The invention relates to compounds to be used for preparation of compositions, which can be applied to the skin to prevent or reduce or treat skin rash or diaper rash resulting from lipolytic dermatitis. The compositions
10 can also be in the form of lotions, creams, powders, oils, foams and the like. The compositions can also be applied to diapers, incontinent-pads, wipes and the like.

The invention also relates to the use of such a composition to prevent or
15 reduce such a skin rash and a process for reducing the lipolytic enzyme activity of lipase enzymes present on external skin.

Background

20 Skin rash caused by dermatitis, often referred to as diaper rash, has always been a problem encountered by the users of disposable absorbent articles, such as diapers, incontinence articles, sanitary towels, training pants etc. Therefore, one of the biggest needs for these users is a solution to this type of skin rash problem.

25

The main factor which influences the development of skin rash is the contact of the skin with the wet body exudates, directly or for example contained in the absorbent article. Especially when the water content is high, skin rash can occur easily.

30

Manufacturers of diapers and skin care products have developed various products over the past decades which help reduce the occurrence of diaper rash (or skin rash).

- 5 The main focus thereby has been to reduce the exposure of the skin to the body exudates. This is for example done by introduction to the diaper of absorbing or better absorbing materials. The amount of water which is in contact with the skin is thus reduced.
- 10 Other products which are developed to address the skin-rash problem reduce the exposure of the skin to certain ingredients of the body exudates. An example of such ingredients of the exudate are bacteria which can infect the skin and thus start off or aggravate the skin rash.
- 15 For example, lotions have been developed which can form a barrier between the skin and the body exudates. Also, anti-inflammatory compositions can be applied to the skin or absorbent article.

EP 0191128 discloses a preparation comprising 8-hydroxy quinoline
20 sulphate for treatment of skin irritation.

However, still one of the most heard complaints amongst users of absorbent articles such as diapers is the persistence of skin or diaper rash, despite the numerous products on the market which can be applied to prevent diaper or
25 skin rash.

It has been discovered that yet another factor can set off or aggravate skin rash, namely the presence in the body exudate of various enzymes, especially lipase and protease enzymes.

EP 0117632-B relates to disposable articles which comprise lipase inhibiting agents, preferably zinc containing components, and a vehicle material.

US 3,091,241 relates to the use of triacetine in vaginal tampons to inhibit
5 lipase enzyme activity.

US 3, 961,486 teaches the use of adipic acid to reduce the lipase enzyme activity and to reduce the skin rash.

10 When the skin is exposed to lipase enzymes, the lipids of the skin can be affected by these enzymes. The protection or barrier function of the top layer of the skin (the Stratum Corneum) will thus be diminished. This can effect the health of the skin and/or facilitate the infection of the skin. This can thus lead to skin or diaper rash.

15

It is known that bile salts are present in the body exudates. These bile salts are known to emulsify the lipids in the body, which ensures that the lipase enzymes are capable of performing on the lipid/ water interface. The inventors have now found that these bile salts still have an emulsifying
20 function once outside the body. They then continue to aid the lipase enzyme which is also present in the body exudate by attacking the lipids in the outer layer skin, exposed to the body exudate.

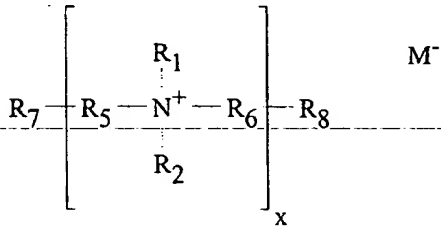
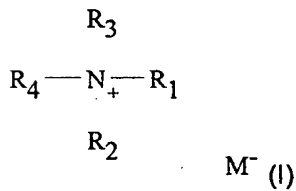
The inventors have found that these bile salts can be inactivated (and
25 thereby the lipase can be deactivated) when the salts are reacted with specific cationic compounds. The inventors have found that the cationic compounds can thereto be applied to the skin by introduction of the cationic compounds into a composition, cream, lotion, foam, oil, powder which is to be applied directly to the skin or which can be applied to an absorbent
30 article, such as a diaper, which can be applied to the skin..

5

10

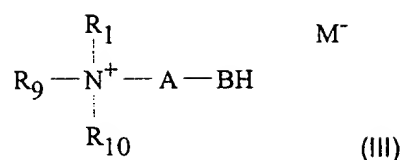
Summary of the Invention

15



(11)

or an amphoteric compound and preferably an acidity source, the amphoteric compound having at its iso-electric point the formula:



5

for preparation of a composition for treatment, prevention or reduction of lipolytic dermatitis of the external skin, wherein R_1 , R_2 , R_3 and R_4 are independently a C_1 - C_{22} alkyl, alkenyl, aryl, arylalkyl, amidoalkyl, (poly) alkoxy, hydroxyalkyl, or acyl groups, or two or more groups of R_1 , R_2 , R_3 and R_4 form together one or more ring structures; R_5 , R_6 and A are independently a C_1 - C_{22} alkylene, alkenylene, (poly) alkoxy, hydroxyalkylene, arylalkylene or amido alkylene groups; R_7 and R_8 are independently a C_1 - C_4 alkyl, alkenyl, alkoxy group or a hydroxy group or hydrogen; R_9 and R_{10} are independently a C_1 - C_{22} alkyl, alkenyl, aryl, arylalkyl, amidoalkyl, (poly) alkoxy, hydroxyalkyl, or acyl groups, or two or more of the groups R_1 , R_9 and R_{10} form together one or more ring structures; BH is a proton donating group; x is from 2 to 4; and M^- is a counter ion.

20 The invention also provides a disposable absorbent article, preferably a diaper, containing the composition as described above, preferably at such a level that the cationic compounds therein are present at a level of from 0.01% to 10% by weight of the article, preferably comprised in the topsheet of the diaper.

25

The invention also provides compositions being cosmetic compositions in the form of a cream, foam, lotion, gel, oil, ointment or powder for treatment, prevention or reduction of lipolytic dermatitis of the external skin. These compositions preferably comprise preferred cationic compounds above,

namely wherein the cationic compound comprises one or more substituted R₁, R₂, R₃, R₄, R₉ or R₁₀ groups and/ or a substituted R₅ and/or substituted R₆ group, whereby the substituent is selected from the group from the group consisting of derivatives of silicon, glucose, fructose and
5 saccharose, whereby the compositions are substantially free from nonionic and/ or anionic surfactants and/ or phosphoric acid esters and/ or enzymes for topical application to the external skin.

10

Detailed Description of the Invention

The cationic compounds are used for the preparation of compositions for prevention, reduction or treatment of lipolytic dermatitis of the (external) skin.

15

By treatment or reduction is meant herein the reduction of the dermatitis or the rash of the skin which is caused by lipolytic enzymes, or at least stabilising the dermatitis or rash of the skin which is caused by lipolytic enzymes.

20

The composition of the invention can be directly applied to the skin which is in contact with lipolytic or lipase enzymes. Such compositions can be comprised in cosmetic composition, being in the form of a cream, lotion, foam, oil, ointment, powder or gel, which can be topically applied to the
25 skin.

30

Alternatively, the compositions of the invention can be applied to an absorbent article, which can be brought in close contact with the skin which is in contact with the lipolytic enzymes. Such articles are preferably disposable articles such as diapers, incontinent pads, training pants, sanitary towels, feminine hygiene garments, dry or wet wipes.

By the term "topical application" or "topical(ly) applied", as used herein, is
5 meant directly laying on or spreading on epidermal tissue, especially outer
skin.

The amount of the composition comprising the cationic compounds of the
invention will vary with the particular location of the condition being treated,
10 the severity of the condition being treated, the expected duration of the
treatment, any specific sensitivity to either the composition itself, or the
concentration of the lipase-inhibiting agent specific to the user, the condition
of the user, concurrent therapies being administered, other conditions
present in the user.

15

For the present invention it is preferred that a minimum inhibitory
concentration of the compositions containing the cationic compound is
topically applied, to act as a bile salt-inhibiting composition to the area in
need of treatment of the lipolytic dermatitis or the area where prevention of
20 lipolytic dermatitis is desired in a form such that it is available to inhibit the
activity of the lipase present.

This area (or "affected area", as used herein) is meant the area of the skin
which is presently exhibiting any levels of skin rash or lipolytic dermatitis, or
25 the area which will be in prolonged contact with body exudates containing
lipase enzymes and bile salts. This also includes the area immediately
proximate to the described area. It is the area at which treatment, reduction
of, and /or prevention is desired.

30 Lipolytic dermatitis

This invention deals with compositions (or (disposable) absorbent articles incorporating the compositions of the invention) for the treatment of skin or diaper rash or diaper dermatitis caused by lipase enzymes present in the body exudates (thus lipolytic dermatitis), and other conditions which are
5 associated with prolonged contact of the skin with body exudates and/or the wearing of a absorbent article, or in particular a diaper.

Lipase, lipase enzymes or lipolytic enzymes is the trivial or common term employed to represent what is in fact a group of enzymes belonging to the
10 esterases. Their general activity is to hydrolyze fats present in the ester form (such as the glycerides found in human skin), and accordingly generate fatty acids and glycerol. Because this group of enzymes is so widely distributed in plants, moulds, bacteria, milk, and milk-products, as well as in almost all animal tissues, and because moreover human lipase enzymes are
15 present in the pancreatic exudates, they are almost always present in body exudates.

The activity of lipase contributes to almost all skin rash or in particular diaper rash, causing irritation by the digestive degenerative action of lipase on the
20 skin per se and by breaking down the lipid skin-components compromises the barrier property of the skin in the affected area. This breakdown of the integrity of the skin allows other components of the body exudates (urine and faeces in particular), which may not, by themselves, be irritating, to migrate through the compromised skin. At this point normally harmless
25 components may then become irritating.

The lipase has been found to be activated by the presence of pancreatic bile salts, which are present in the body exudates. The bile salts function as emulsifiers of lipids, enabling the lipase enzymes to act on the water-lipid
30 interface.

When employing the compositions of the present invention, the bile salts are inactivated and thus the lipase is inactivated. It is thereby prevented from acting upon the skin and causing irritation. Such inactivation of lipase prevents the compromise of the barrier function of the skin which in turn prevents irritants (such as fungi, bacteria, and bile salts and acids) from migrating through and further irritating and inflaming the skin.

Compositions

10 Cationic compounds

The present invention provides specific cationic compounds, as defined above for use in the preparation of compositions which can be used for treatment, prevention or reduction of the skin rash or particularly diaper rash, which is set off or aggravated by lipase or lipolytic enzymes, thus being the result of lipolytic dermatitis.

It should be understood that for the purpose of this invention, the groups R₁-R₁₀ of formulations (I), (II) and (III) above can be substituted by any appropriate substituent group.

In the formulations above, R₁, R₂, R₃ and R₉ are independently preferably C₁-C₈, more preferably C₁-C₄ alkenyl or alkoxy, more preferably alkyl groups, most preferably methyl or ethyl groups.

Preferably, R₄, R₅ and R₁₀ are independently C₈-C₁₈, more preferably C₁₂-C₁₆ alkenyl or alkoxy, more preferably alkyl or arylalkyl groups, whereby it can be preferred that one of the R₄, R₅ and R₉ substituents is benzyl group.

Alternatively, it can be preferred that the cationic compound comprises at least

one R₁, R₂ or R₃ or R₉ being a poly alkoxy group.

Thus, R₁, R₂, R₃ and R₉ preferably are independently polyalkoxy groups
5 comprising C₂-C₆, preferably C₂-C₃ alkoxy units and having an alkoxylation number of from 2 to 50, preferably from 5 to 18. Then, R₃, R₄ and R₁₀ are independently preferably C₁-C₈, more preferably C₁-C₄ alkenyl or alkoxy, more preferably alkyl groups, most preferably methyl or ethyl groups.

10 A, R₅ and R₆ are, independently, preferably C₁-C₆ alkenylene or more preferably alkylene groups, most preferably methylene or ethylene.

Preferred compounds can be benzalkonium chloride or Merquat 2200 (Trade name, being a 2-Propeneamide polymer of N,N-dimethyl-N-2-
15 Propenyl-1-amonium chloride).

Preferred cationic compounds of the formulas above comprise one or more substituted R₁, R₂, R₃, R₄, R₉ or R₁₀ groups and/ or a substituted R₅ and/or substituted R₆ group, whereby the substituent is selected from the
20 group from the group consisting of derivatives of silicon, glucose, fructose and saccharose.

Preferred can be Glucquat 125 (trade name, being lauryl dimethyl glucet-10-hydroxydimonium chloride).

25 Preferred cationic compounds of the formula (III) above are betaine or sulpho betaine
having preferably R₁ and R₉ being a methyl group.

The composition preferably comprise the cationic compounds at a level of
30 from 0.01% to 90%, more preferably from 0.5% to 60%, most preferably from 2% to 25% by weight of the composition.

The compositions can be prepared by any conventional formulation technique known in the art.

5

Additional ingredients

The composition of the invention can comprise additional ingredients. Which ingredient are present and in which level depends on the character of the composition and the use thereof.

10

A highly preferred additional component to be used for the preparation of the compositions of the present invention or for use in the compositions of the present invention are certain ester compounds.

15

These esters can function as enzyme substrates, which, when acted upon by a hydrolyzing enzyme, such as lipase enzymes will be hydrolyzed resulting in the release of free acids. The presence of these acids will lower the pH of the area where the esters were topically applied to. This will amount to inactivation of all or most enzymes present in this area, in the body exudates, such as the lipase enzymes, protease enzymes, which can all affect the skin, resulting in irritation or skin rash.

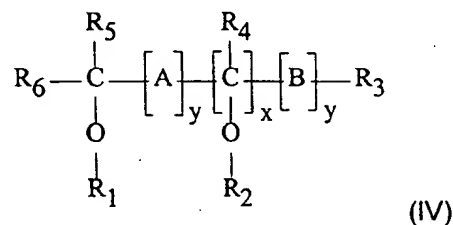
20

In the compositions of the present invention the use of such ester compound has been found to have a surprising effect: it has been found that the cationic compounds provide an immediate effect, i.e. immediate inhibition or inactivation of the lipase enzymes, which may reduce over time, whilst the effect of the ester compounds is relatively delayed but long-lasting. Thus, the combination of the two compounds provides an very effective, immediate and long-lasting reduction or prevention of the diaper/skin rash,

25
30

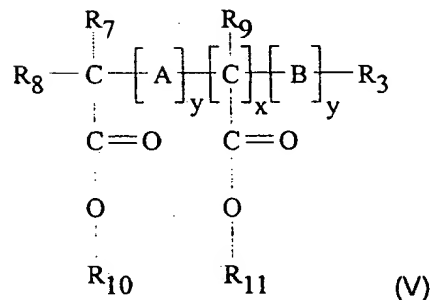
resulting from dermatitis caused by the enzymes present on the body exudates on the skin.

A highly preferred ester compound for use in, or for preparation of the compositions of the invention is of the formulation:



or

10



15 wherein R₁ and each R₂ independently are an acyl group with from 2 to 22 carbon atoms, or an alkyl, alkenyl, arylalkyl, hydroxyalkyl group with from 1 to 24 carbon atoms or hydrogen, whereby at least one of R₁ and R₂ is such an acyl group, R₃, R₄, R₅, R₆, R₇, R₈, and R₉ are independently an alkyl, alkenyl, arylalkyl, hydroxyalkyl, alkoxy groups of from 1 to 24 carbon atoms, hydroxy group or hydrogen; R₁₀ and R₁₁ are independently an alkyl, alkenyl, arylalkyl, hydroxyalkyl, alkoxy groups of from 2 to 24 carbon atoms, hydroxy group or hydrogen; A and B are independently a C₁-C₆ linear or

20

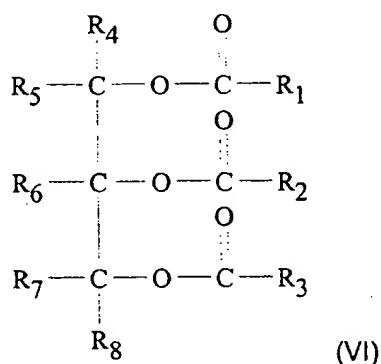
branched alkylene, alkenylene, alkoxyalkylene, hydroxyalkylene groups; the values of x are independently from 0 to 15; the values of y are independently 0 or 1, with the proviso that when x = 2 and y = 0, at least one R₂ is an alkyl, alkenyl, arylalkyl, hydroxyalkyl group with from 1 to 24 carbon atoms or
 5 hydrogen

Preferred are the ester compounds as defined above, wherein the compound is of formula (IV) or (V) wherein x is 1 or 2, y is 0; R₁ and one R₂ are a C₂-C₁₆ acyl group, R₁₀ and one or more R₁₁ are a C₂-C₁₆ alkyl
 10 group; R₃, R₄, R₅, R₆, R₇ and R₈ are hydrogen

It is highly preferred that the additional ester compound is a mono or diester of formula (V), most preferably a mono or diester of citric acid or tartaric acid (or salts thereof), or a triester of citric acid.

15

Another highly preferred ester compound of formula for use in the preparation of the compositions of the present invention or for use in the compositions can be an ester compound of the formulation:



20

wherein R₁, R₂ and R₃ are independently an alkyl or alkenyl or hydroxyalkyl group with from 1 to 22 carbon atoms, and R₄, R₅, R₆, R₇ and R₈ are independently selected from the group consisting of C₁-C₁₀ linear or

branched alkyl, alkenyl or hydroxyalkyl groups, hydroxy, chloride, bromide, amine or hydrogen.

Highly preferred are the compounds above wherein R₄, R₅, R₆, R₇ and R₈
5 of said compound are hydrogen and preferably wherein R₁, R₂ and R₃ are independently an C1-C4 alkyl group.

Such a preferred compound can be glycerol triacetate.

10 The additional ester compounds are preferably present in the compositions of the invention at a level of from 0.01% to 20%, more preferably from 0.05% to 10%, most preferably from 0.1% to 5% by weight of the composition.

15

Lotions, creams, oils, foams, ointments, gels, powders and the like

The compositions of the invention can be cosmetic compositions in the form of

20 lotions, creams, oils, foams, ointments, powders, gels. They can comprise any of the ingredients commonly used in the art for such compositions.

Preferred cosmetic compositions are prepared by use of cationic compounds as described above, wherein the cationic compound comprises
25 one or more substituted R₁, R₂, R₃, R₄, R₉ or R₁₀ groups and/ or a substituted R₅ and/or substituted R₆ group, whereby the substituent is selected from the group from the group consisting of derivatives of silicon, glucose, fructose and saccharose, whereby the compositions are substantially free from nonionic and/ or anionic surfactants and/ or
30 phosphoric acid esters and/ or enzymes for topical application to the external skin.

It is to be understood that the ingredients of the compositions above will depend on the character of the composition, thus lotions will generally comprise different additional ingredients than powders.

5

In the cosmetic creams, lotions, gels, oils or powders comprising the composition of the invention preferably an acidity source is present, preferably such that is capable to reduce the pH of the skin to below a pH of 8, more preferably below a pH of 7, more preferably below a pH of 6, or
10 even more preferred below a pH of 5.

It can be preferred that the cosmetic cream, lotion, gel, oil, ointment or powder are substantially free from nonionic and/ or anionic surfactants and/ or phosphoric acid esters and/ or enzymes.

15

Absorbent Articles

The compositions of the present invention can be comprised in an absorbent
20 article, preferably a disposable absorbent article. A particularly preferred absorbent articles therefor is a wipe or a diaper. The diaper preferably comprises the composition in the topsheet of the diaper.

As used herein, the term "absorbent articles" refers to devices which absorb
25 and contain body exudates, and, more specifically, refers to devices which are placed against or in proximity to the body of the wearer to absorb and contain the various exudates discharged from the body. The term "disposable" is used herein to describe absorbent articles which are not intended to be laundered or otherwise restored or reused as an absorbent
30 article (i.e., they are intended to be discarded after a single use and,

preferably, to be recycled, composted or otherwise disposed of in an environmentally compatible manner).

The structure of the disposable absorbent article is not critical to the practice
5 of the present invention.

Normally, the composition is incorporated into the absorbent article or diaper in particular in an amount which will deliver the required treatment or reduction or prevention of the lipolytic dermatitis preferably after frequent
10 use.

The disposable absorbent article preferably contains the composition according to the invention at a level such that the cationic compounds therein are present at a level of from 0.01% to 30%, more preferably from
15 0.01% to 10%, most preferably from 0.05% to 5% by weight of the article.

An absorbent article generally comprises

- an absorbent core (which may consist of sub-structures);
- a fluid pervious topsheet;
- 20 - a fluid impervious backsheet;
- optionally further features like closure elements or elastification.

As used herein, the term "diaper" refers to an absorbent article generally
25 worn by infants and incontinent persons that is worn about the lower torso of the wearer. It should be understood, however, that the present invention is also applicable to other absorbent articles such as incontinent briefs, incontinent undergarments, diaper holders and liners, feminine hygiene garments, and the like.

A preferred wipe for the purpose of this invention comprises an absorbent fibrous material or core into which the composition may be releasably incorporated. A highly preferred disposable wipe for the purposes of this invention comprises an absorbent fibrous material and a faeces-impermeable backing material; said backing being superposed or co-extensive with one face of said absorbent fibrous material; said backing material most preferably being a web-backing material and most preferably having a width greater than said absorbent material providing side marginal portions which extend beyond said absorbent material, said margin portions being folded around and on top of the edges of said absorbent material. The compositions of the invention agent may be releasably incorporated into the wipe structure by diverse methods which will be readily apparent to those skilled in the art. For example, the compositions can be present in aqueous or volatile carrier such as water, ethanol, or the like, or creams, lotions, oils, ointments, gels or powders, and applied to the absorbent material by spraying, dipping, printing, soaking or otherwise contacting the absorbent material of the wipe with the lipase-inhibiting agent and its carrier. A skin cleansing agent, preferably an oleaginous cleansing agent, may optionally be releasably incorporated into the absorbent material as well.

20

The compositions of the present invention are preferably incorporated into a diaper, preferably into the absorbent core structure or most preferably into the topsheet structure. The composition may be incorporated into the diaper structure by diverse methods which will be readily apparent to those skilled in the art. For example, the composition can be, optionally after being dispersed aqueous or volatile carrier such as water, ethanol, or the like, applied to the diaper topsheet, to the absorbent core, or to the core side of the backsheet, by spraying, dipping, printing, soaking or otherwise contacting the selected structural element of the diaper with composition and optionally its carrier, which is called herein impregnation.

30

The diaper preferably comprises a liquid pervious topsheet, a liquid impervious backsheet joined with the topsheet, an absorbent core positioned between the topsheet and the backsheet. While the topsheet, the backsheet, and the absorbent core may be assembled in a variety of well known configurations, preferred diaper configurations are described generally in U.S. Patent 3,860,003 entitled "Contractable Side Portions for Disposable Diaper" which issued to Kenneth B. Buell on January 14, 1975; and U.S. Patent Application Serial No. 07/715,152, allowed, "Absorbent Article With Dynamic Elastic Waist Feature Having A Predisposed Resilient Flexural Hinge", Kenneth B. Buell et al. filed June 13, 1991.

The backsheet is positioned adjacent the garment surface of the absorbent core and is preferably joined thereto by attachment means such as those well known in the art. For example, the backsheet may be secured to the absorbent core by a uniform continuous layer of adhesive, a patterned layer of adhesive, or an array of separate lines, spirals, or spots of adhesive. Adhesives which have been found to be satisfactory are manufactured by H. B. Fuller Company of St. Paul, Minnesota and marketed as HL-1258. The attachment means will preferably comprise an open pattern network of filaments of adhesive as is disclosed in U.S. Patent 4,573,986 entitled "Disposable Waste-Containment Garment", which issued to Minetola et al. on March 4, 1986, more preferably several lines of adhesive filaments swirled into a spiral pattern such as is illustrated by the apparatus and methods shown in U.S. Patent 3,911,173 issued to Sprague, Jr. on October 7, 1975; U.S. Patent 4,785,996 issued to Ziecker, et al. on November 22, 1978; and U.S. Patent 4,842,666 issued to Werenicz on June 27, 1989. Alternatively, the attachment means may comprise heat bonds, pressure bonds, ultrasonic bonds, dynamic mechanical bonds, or any other suitable attachment means or combinations of these attachment means as are known in the art.

The absorbent article may further comprise elastification or closure features well-known in the art and - for example - described in E 0254476 (Alemany).

5 The topsheet is positioned adjacent the body surface of the absorbent core and is preferably joined thereto and to the backsheet by attachment means such as those well known in the art. As used herein, the term "joined" encompasses configurations whereby an element is directly secured to the other element by affixing the element directly to the other element, and configurations whereby the element is indirectly secured to the other
10 element by affixing the element to intermediate member(s) which in turn are affixed to the other element.

Generally, the topsheet is compliant, soft feeling, and non-irritating to the wearer's skin. Further, the topsheet is liquid pervious permitting liquids
15 (e.g., urine) to readily penetrate through its thickness. A suitable topsheet may be manufactured from a wide range of materials, such as porous foams; reticulated foams; apertured plastic films; or woven or nonwoven webs of natural fibres (e.g., wood or cotton fibres), synthetic fibres (e.g., polyester or polypropylene fibres), or a combination of natural and synthetic
20 fibres. There are a number of manufacturing techniques which may be used to manufacture the topsheet. For example, the topsheet may be a nonwoven web of fibres spunbonded, carded, wet-laid, meltblown, hydroentangled, combinations of the above, or the like.

25 The various core, topsheet and backsheet materials can be arranged in any way known in the art, such as described in Weisman et al. (EP 0 202 125) or Alemany et al. (EP 0 254 476).

Also encompassed in the present invention is a process for making a diaper
30 comprising the composition of the invention whereby the topsheet is impregnated with the composition before incorporation in the diaper.

Process

5 Also encompassed in the invention is a process for reducing the lipolytic enzyme activity of the lipase enzymes present on the external skin, whereby the process comprises the steps of preferably topical, applying of the compositions of the invention to the external skin, or preferably topical, applying of a composition according to the invention to the external skin.

10

It can be preferred that an additional acidity source is present, capable of reducing the pH to below 7.3, preferably below 6 or even 5.

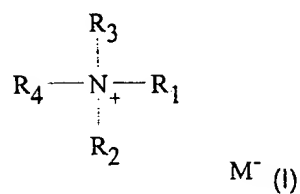
15 The composition used in the process or the process is preferably such that within the first 15 minutes after application of the compound or the composition to the affected area, the lipase enzyme activity is reduced to 35%, preferably 25%, more preferably less than 20% of the initial lipase activity in this area.

20 Preferably the composition used in the process or the process is such that 60 minutes after application of the composition to the affected area, the lipase enzyme activity is still less than 45%, preferably 35%, more preferably less than 30% of the initial lipase activity in this area.

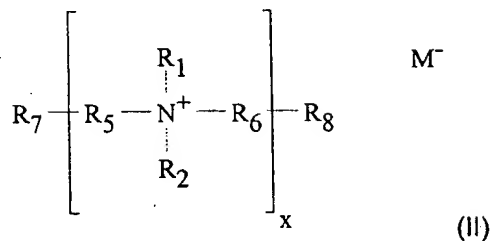
25 This process can be also be done by applying an absorbent article which comprises the composition present in a suitable level, to the skin.

5 WHT IS CLAIMED IS:

1. The use of one or more cationic compounds of formulas:

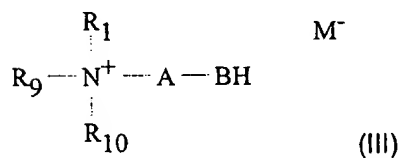


or



or an amphoteric compound and preferably an acidity source, the amphoteric compound having at its iso-electric point the formula:

15



for preparation of a composition for prevention, treatment or reduction of
20 lypolytic dermatitis to the external skin, wherein R_1 , R_2 , R_3 and R_4 are
a C_1 - C_{22} alkyl, alkenyl, aryl, arylalkyl, amidoalkyl, (poly) alkoxy,

hydroxyalkyl, or acyl groups, or two or more groups of R₁, R₂, R₃ and R₄ form together one or more ring structures; R₅, R₆ and A are independently a C₁-C₂₂ alkylene, alkenylene, (poly) alkoxy, hydroxyalkylene, arylalkylene or amido alkylene groups; R₇ and R₈ are independently a C₁-C₄ alkyl, alkenyl, alkoxy group or a hydroxy group or hydrogen; R₉ and R₁₀ are independently a C₁-C₂₂ alkyl, alkenyl, aryl, arylalkyl, amidoalkyl, (poly) alkoxy, hydroxyalkyl, or acyl groups, or two or more of the groups R₁, R₉ and R₁₀ form together one or more ring structures; BH is a proton donating group; x is from 2 to 4; and M- is a counter ion.

- 2 The use of a cationic compound for preparation of a composition according to Claim 1 wherein the composition is for prevention, treatment or reduction of lipolytic diaper rash.
3. The use of a cationic compound for preparation of a composition according to Claim 1 or 2 wherein the cationic compound comprises one or more substituted R₁, R₂, R₃, R₄, R₉ or R₁₀ groups and/ or a substituted R₅ and/or substituted R₆ group, whereby the substituent is selected from the group consisting of derivatives of silicon, glucose, fructose and saccharose.
4. The use of a cationic compound for preparation of a composition according any of Claims 1 to 3 wherein the cationic compound comprises at least one R₁, R₂, R₃ and R₉ being C₁-C₈, preferably C₁-C₄ alkyl, alkenyl or alkoxy groups, most preferably methyl or ethyl groups.
5. The use of a cationic compound for preparation of a composition according to any of the preceding Claims, wherein the cationic

compound comprises at least one R₁, R₂ or R₃ or R_g being a poly alkoxy group.

- 5 6. The use of a cationic compound for preparation of a composition according to any of the preceding Claims, wherein the cationic compound is of formula (III), being a betaine compound or sulphobetaine compound
- 10 7. A composition according to any preceding Claim, whereby the cationic compound is present at a level of from 0.01% to 90% by weight.
- 15 8. A disposable absorbent article containing the composition according to any preceding Claim, whereby the cationic compound, comprised in the composition, is present at a level of from 0.01% to 10% by weight of the article.
- 20 9. A disposable absorbent article containing the composition according to any of Claims 1 to 7 Claim at a level of from 0.01% to 10% by weight of the article.
- 25 10. A disposable absorbent article according to Claim 8 or 9 in the form of a diaper or wipe.
- 30 11. A disposable absorbent article according to Claim 10, whereby the diaper comprises a topsheet, containing the composition according to any of Claims 1 to 7.
12. A cosmetic composition according to any of Claims 1 to 7 in the form of a cream lotion, gel, foam, oil, ointment or powder, which is substantially free from nonionic and/ or anionic surfactants and/ or phosphoric acid esters and/ or enzymes for topical application to the external.

13. A cosmetic cream, lotion, gel, oil or powder according to Claim 12 wherein an acidity source is present.
- 5 14. A process for reducing the lipolytic enzyme activity of lipolytic enzymes present on the external skin comprising the step of applying a composition or absorbent article comprising the composition according to any preceding Claim to the external skin.
- 10 15. A process for making a diaper according to Claim 11, whereby the topsheet is impregnated with a composition according to any of Claims 1 to 7 prior to incorporation of the topsheet in the diaper.
-

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 98/24691

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A61K31/00 A61K7/50 A61K7/00 A61L15/34 A61F13/15

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96 17681 A (THE PROCTER & GAMBLE CO.) 13 June 1996 see the whole document ---	1-15
X	DATABASE "CHEMICAL ABSTRACTS" (HOST: STN); Abs. 99: 141 503, Columbus, OH, USA; & JP 58 060 068 A(KAO CORP.) 9 APRIL 1983 XP002066466 see the whole document ---	1-15
X	DATABASE "CHEMICAL ABSTRACTS" (HOST: STN); Abs. 104: 188 122, Columbus, OH, USA; & JP 60 215 870 A(KAO CORP.) 29 OCTOBER 1985 XP002066467 see the whole document ---	1-15
-/--		

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

4 February 1999

Date of mailing of the international search report

11/02/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl.
Fax: (+31-70) 340-3016

Authorized officer

Glikman, J-F

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 98/24691

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9617681 A	13-06-1996	IT T0940991 A AU 4241796 A BR 9509864 A CA 2207081 A CN 1173146 A CZ 9701699 A EP 0796144 A FI 972385 A HU 77680 A JP 10509915 T NO 972549 A	06-06-1996 26-06-1996 25-11-1997 13-06-1996 11-02-1998 15-10-1997 24-09-1997 05-06-1997 28-07-1998 29-09-1998 06-08-1997
US 5240562 A	31-08-1993	AU 678563 B AU 5351894 A CA 2144072 A CN 1118028 A CZ 9501064 A EP 0670931 A FI 951994 A HU 72012 A JP 8502557 T MX 9306659 A NO 951571 A NZ 257228 A SG 52395 A WO 9410381 A	05-06-1997 24-05-1994 11-05-1994 06-03-1996 14-02-1996 13-09-1995 26-04-1995 28-03-1996 19-03-1996 29-04-1994 26-06-1995 26-05-1997 28-09-1998 11-05-1994
US 5141803 A	25-08-1992	AU 623906 B AU 3648289 A CA 1334320 A FI 893047 A JP 2061000 A JP 2643458 B	28-05-1992 04-01-1990 14-02-1995 30-12-1989 01-03-1990 20-08-1997
EP 688901 A	27-12-1995	US 5558873 A AU 692855 B AU 2182495 A CA 2152199 A HU 75858 A JP 8049192 A PL 309216 A AU 4968796 A BR 9604773 A CN 1183127 A WO 9627707 A	24-09-1996 18-06-1998 04-01-1996 22-12-1995 28-05-1997 20-02-1996 27-12-1996 23-09-1996 23-06-1998 27-05-1998 12-09-1996
EP 613675 A	07-09-1994	AU 682333 B AU 5756194 A BR 9400829 A CA 2117136 A GR 1002595 B ZA 9401547 A	02-10-1997 08-09-1994 01-11-1994 06-09-1994 12-02-1997 04-09-1995
US 4943350 A	24-07-1990	NONE	
WO 9730217 A	21-08-1997	FR 2745016 A EP 0882155 A	22-08-1997 09-12-1998

...ormation on patent family members

PCT/US 98/24691

Form PCT/ISA/210 (patent family annex) (July 1992)

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☒ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.

This Page Blank (uspto)
